

What is claimed is:

1. A process for preparing dinitrotoluene, comprising the steps of
  - 5 a) reacting toluene with nitric acid in the presence of sulfuric acid to give mononitrotoluene,
  - b) separating the reaction product from step a) into an organic phase comprising mononitrotoluene and an aqueous phase comprising sulfuric acid,
  - 10 c) reacting the organic phase comprising mononitrotoluene with nitric acid in the presence of sulfuric acid to give dinitrotoluene,
  - 15 d) separating the reaction product from step c) into an organic phase comprising dinitrotoluene and an aqueous phase comprising sulfuric acid,wherein the reaction product from step a) has a content of toluene of 0.1-10% by weight, based on the organic phase, and a content of nitric acid of from 0.1 to  
20 1.2% by weight, based on the aqueous phase, and the phase separation in step b) is effected in such a way that further reaction of the toluene with the nitric acid is prevented.
- 25 2. The process according to claim 1, wherein the reaction product from step a) has a content of toluene of from 3.5 to 5% by weight based on the weight of the reaction mixture from step a).
3. The process according to claim 1, wherein the phase separation in step b) is carried out by means of dynamic separators.
- 30 4. The process according to claim 1, wherein the organic phase comprising mononitrotoluene from step b) is transferred to step c) without further workup.
- 35 5. The process according to claim 1, wherein the aqueous phases comprising sulfuric acid from steps b) and d), if appropriate after a workup and concentration, are reused in step a) and c).
6. The process according to claim 1, wherein the reaction apparatus used for steps a) and c) are stirred tanks and/or flow reactors.
- 40 7. The process according claim 1, wherein step a) is carried out in only one reaction apparatus.

8. The process according to claim 1, wherein step c) is carried out in a maximum of two reaction apparatus connected in series.
- 5 9. The process according to claim 1, wherein step a) is carried out at a temperature in the range between 35 and 70°C.
- 10 10. The process according to claim 1, wherein step c) is carried out at a temperature in the range between 60 and 85°C.
- 10 11. The process according to claim 1, wherein the molar ratio of nitric acid to toluene in stage a) is in the range between 0.95 and 1.12.
- 15 12. The process according to claim 1, wherein the molar ratio of nitric acid to mononitrotoluene in stage c) is in the range between 1.03 and 1.10.
- 20 13. The process according to claim 1, wherein the aqueous phase comprising sulfuric acid from stage b) is concentrated to give sulfuric acid having a concentration of from 85 to 96% and recycled in stage a).
- 20 14. The process according to claim 1, wherein the aqueous phase comprising sulfuric acid from stage d) is admixed with nitric acid and recycled into stage a).
- 25 15. The process according to claim 1, wherein the nitric acid supplied in stage a) and stage c) has a concentration of from 58 to 100%.